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(54) Aerosol can assembly

(57) An aerosol can assembly comprises an aerosol can 1 having a valve stem 2, a thrust plate 4, engagable with the aerosol can 1, a dome shaped overcap 10 having therewithin an integral upstanding block actuator 13 which has a recess (14) (Fig 1) formed therein for receiving and depressing the valve stem 2 of the aerosol can to release its contents through aperture 17, a rigid sleeve 19 abutting between the lower end of the thrust plate 4 and the base of the actuator block 13 to prevent accidental actuation of the aerosol can during storage, and a helical spring 9 to return the aerosol can for valve closure after depression, once the sleeve 19 has been removed. For use in clearing blocked drains.

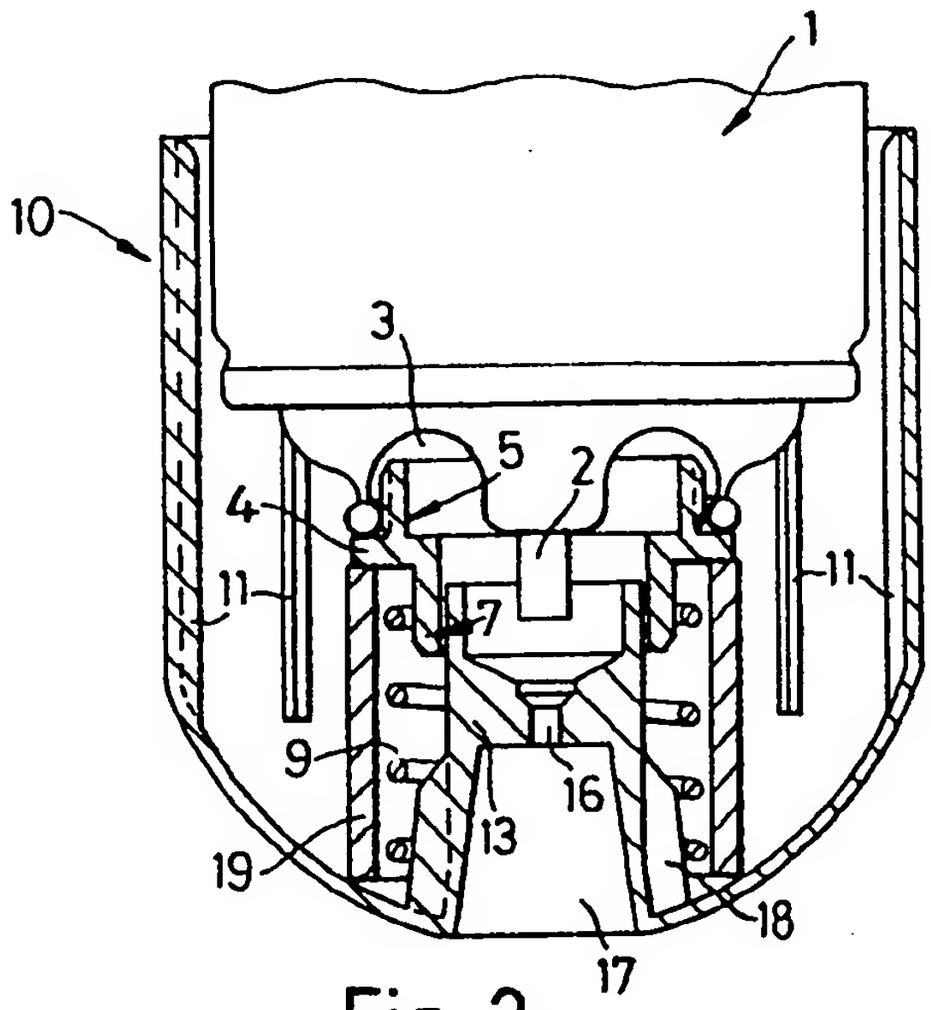

Fig. 2

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

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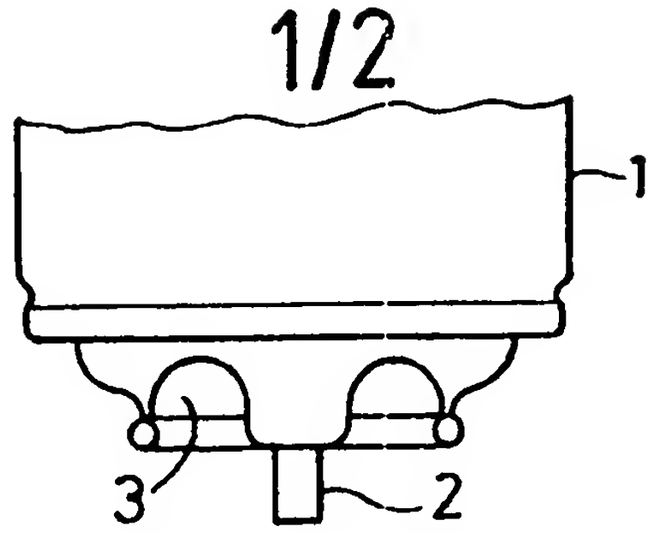
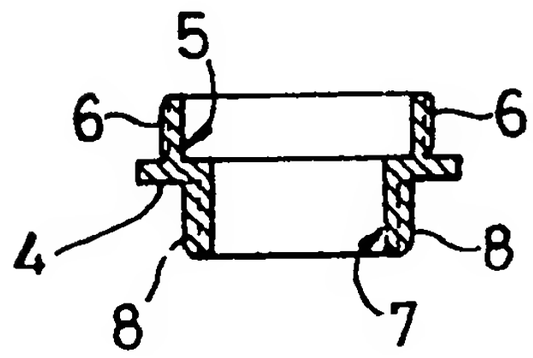




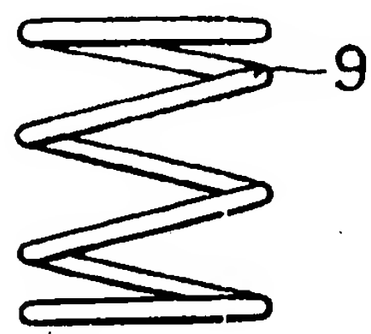
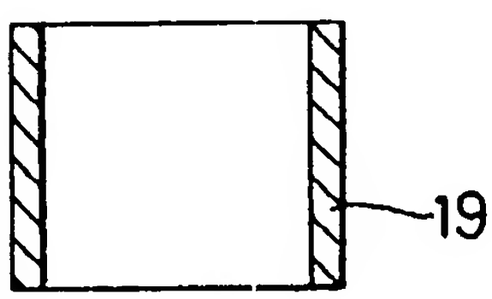
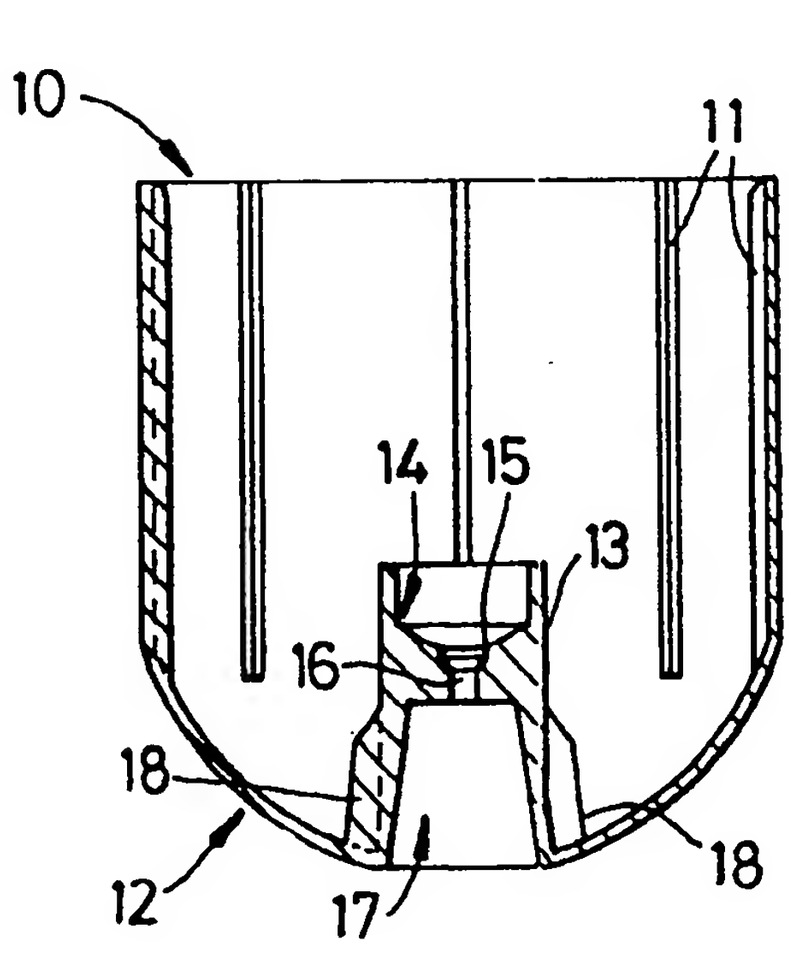


Fig. 1





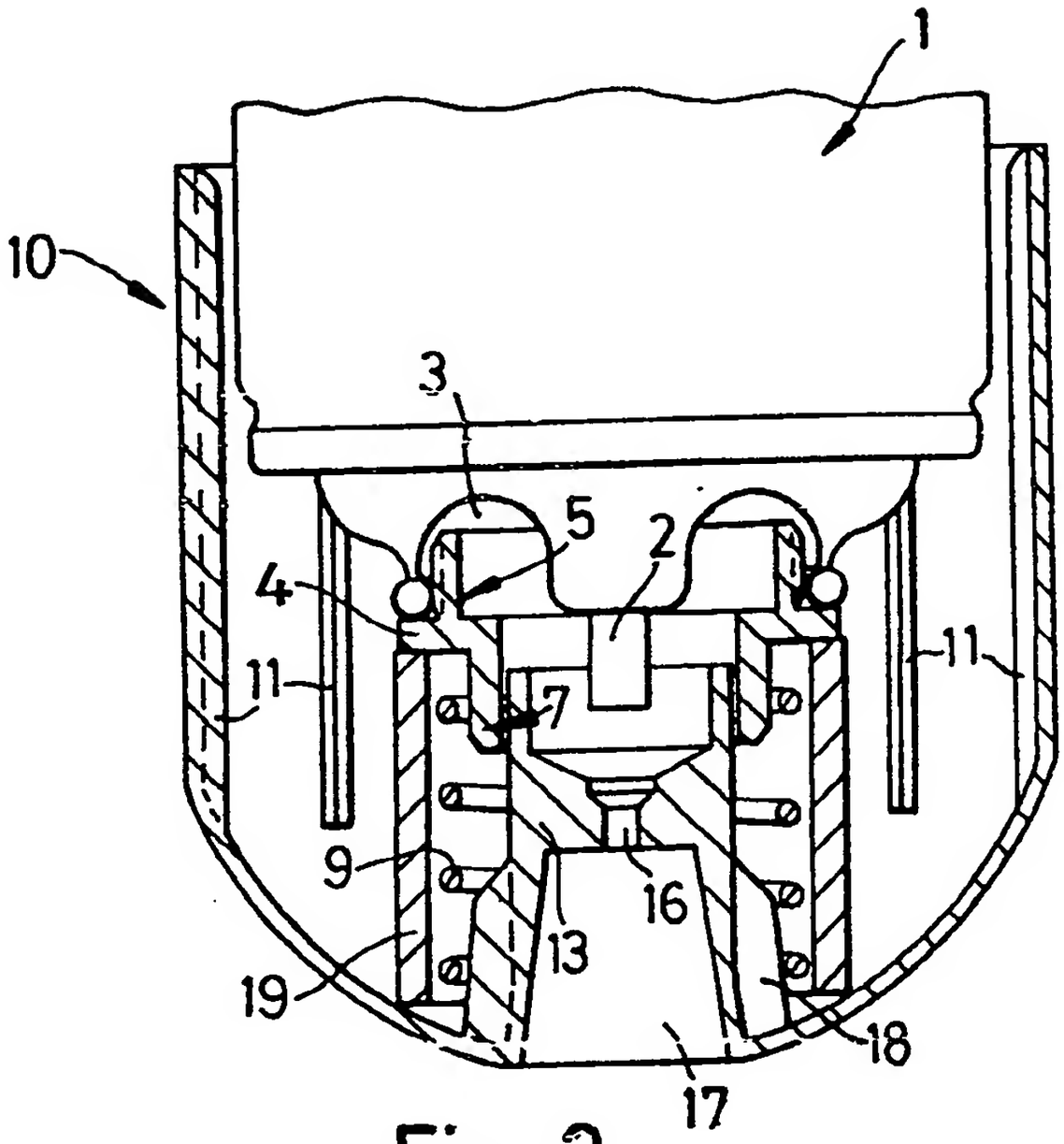


Fig. 2

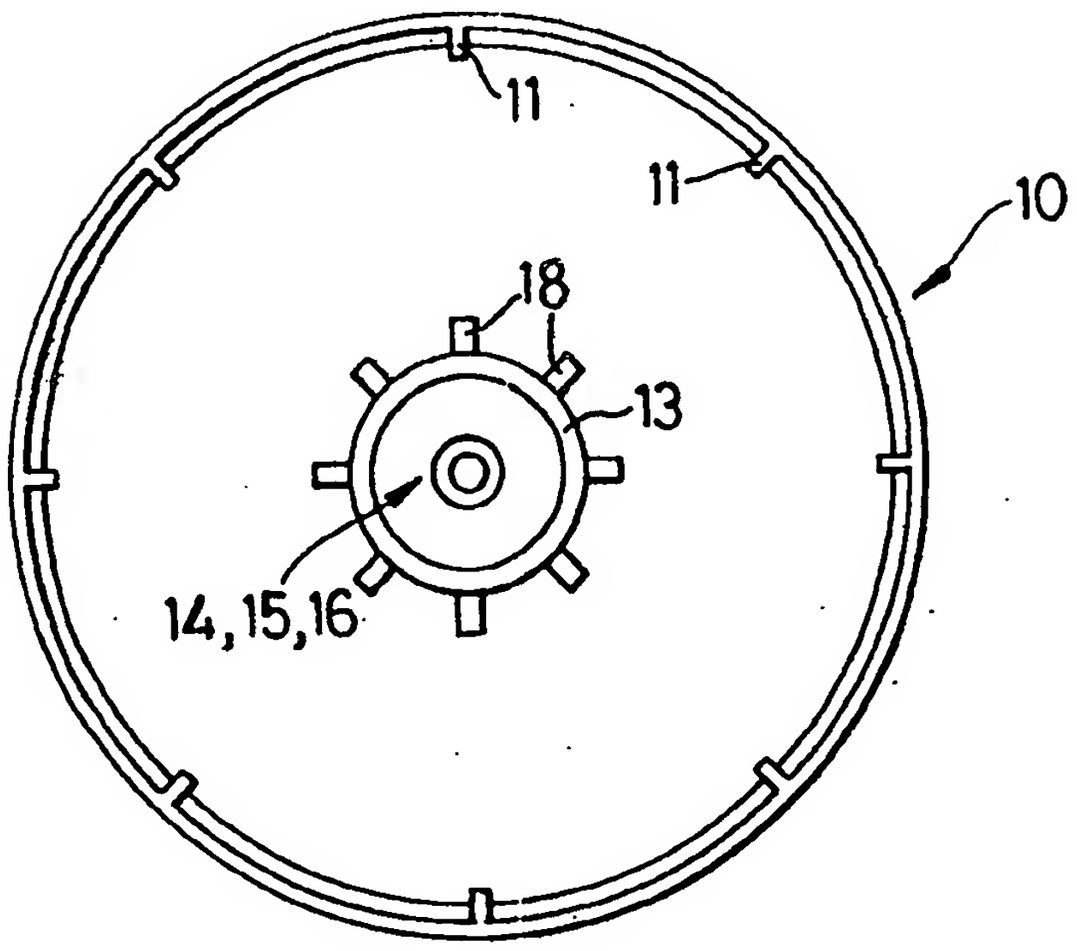


Fig. 3

Aerosol Can Assembly

This invention relates to an aerosol can assembly particularly for use in unblocking drains.

A danger with compressed container assemblies operated by a depressable valve, such as aerosol cans, is that during transit or in storage where boxes are stacked five or six high, the combined weight bearing down on the bottom box can actuate the aerosol cans. This is especially a danger where the top of the cans have been removed for some reason, such as in systems for unblocking drains where an alternative top for sealing with the drain opening may be fitted.

The present invention now provides a safer method of using aerosol cans, which is particularly useful for the storage or transport of the cans.

The invention (an aerosol assembly) is defined hereafter with the aerosol can pointing downwardly. This would be the in use position where the invention is used for unblocking drains.

According to the present invention there is provided an aerosol can assembly comprising:

an aerosol can having a valve stem;

a thrust plate device at its upper end engaged to the aerosol can and including a thrust plate having an aperture in alignment with the valve stem;

an actuator engagable with the valve stem for release of the aerosol propellant;

a resilient member located between the actuator and the lower end of the thrust plate; said resilient member being engaged at one end and capable of engaging in a first looser and second tighter position at the other end;

a rigid removable spacing means adjacent the resilient member and abutting between the lower end of the thrust plate and means at or on the actuator, the spacing means having sufficient length to prevent the valve stem engaging with the actuator.

The removable spacing member fulfils a safety function in that it prevents the valve stem from engaging with the

actuator in transit or storage, but when removed allows free depression or the aerosol can which is then returned to its normal position by the resilient member. The invention therefore provides for safe and convenient operation and storage of an aerosol can. The function of the spacing member could be realised in a number of ways, although preferably it is a sleeve, more preferably positioned adjacent the periphery of the resilient member and is desirably about the same size thereof.

Preferably the resilient member is a closed helical spring and advantageously the base of the actuator has tapered fins extending therefrom over which the helical spring engages more or less firmly depending on how far therealong it is permitted to frovel.

Regarding the actuator, this serves to engage with and depress the valve stem of the aerosol can. In our preferred embodiment, this has been illustrated as an upstanding block with a female groove of complimentary shape to grip and depress the valve stem when the aerosol can is pushed downwards.

Although the invention provides a safer method for transporting and using aerosols, it is particularly useful as an assembly for clearing drains. In such circumstances, desirably a means is provided for seating on the drain opening such as a rubber type gasket. In a preferred embodiment an overcap is provided, desirably carrying the actuator into which the top of the aerosol can projects; and the lower edge of the overcap is dome shaped for seating on the drain opening. In such an embodiment, the inner and lower surface of the overcap can be used as the means against which the lower end of the spacing means abuts.

If the lower end of the resilient means engages at the base of this inner domed surface, then the lower end of the spacing means could abut against the upwardly graduating portion of the domed surface and thereby provide a height or spacing advantage to help prevent accidental actuation of the aerosol valve stem.

Preferably also, the thrust plate device includes lugs for engagement in a crimped recess on the top on the aerosol can, and for engagement with the resilient member.

The invention will now be described by way of example only with reference to the accompanying drawings, in which:-

Fig. 1 is an exploded axial sectional view of a downwardly pointing aerosol assembly;

Fig. 2 is a sectional view of the aerosol assembly shown in Fig. 1 in the storage position; and

Fig. 3 is a plan view of the inside overcap and actuator of aerosol assembly.

In the drawings the aerosol assembly is shown pointing downwardly which is its working position for unblocking drains.

Referring to Figs. 1 and 2, there is shown a downwardly pointing top of a conventional aerosol can 1 having a valve stem 2 for emission of the propellants and a crimped annular recces 3 around the valve stem 2. A thrust plate device comprises an annular thrust plate 4, the central aperture of which is in alignment with the valve stem 2, a first annular flange 5 extending perpendicular to the thrust plate 4 from midway on the upper side thereof. The first annular flange 5 has eight interference fit lugs 6 spaced mutually there around and distanced from the axis of the first annular flanges 5 to ensure a tight fit in the crimped recess 3 of the aerosol can 1 of (Fig. 2). A second annular 7 flange extends downwardly and is perpendicular to the inner edge of the thrust plate 4 and also has eight mutually spaced lugs 8 around its outer periphery engaging one end of a closed helical spring 9 positioned forward of the thrust plate device 4 to 8. The lower end of the spring 9 is engaged with an actuator 13 within an overcap 10.

The overcap 10 is cup shaped (Fig. 1 and 2) and includes eight mutually spaced ribs 11 (Fig. 3) on the inner surface thereof, and a shallow domed lower end 12 having a matt finish to ensure a good seat on drain openings. A cylindrical actuator 13 (Figs. 1 to 3) extends upwardly and centrally within the overcap ad has a through extending

axial opening defined by an upper annular recess 14, 15, 16 and lower annular recess 17. The upper annular recess includes a female body 14, tapered top 15 and valve stem 16 portions for receiving the respective parts of the aerosol can 1 and depressing the valve stem 2 to release the aerosol propellant. The lower annular recess 17 extends upwardly from the lower domed surface 12 of the overcap 10, and communicates with the stem valve recess 16. Extending outwardly from the lower peripheral portion of the cylindrical actuator 13 are eight mutually spaced locking fins 18 which are tapered to allow increasingly engagement with the lower end of the helical spring depending on how far they are allowed to move therealong.

A safety sleeve 19 of about the same size as the relaxed spring 9 is also provided as a spacing member to prevent accidental actuation of the aerosol can during transit or storage.

During transit/storage the thrust plate device will be engaged firmly between the aerosol can 1 and helical spring through its respective first and second sets of fins 6 and 8. The safety sleeve 19 abuts between the upwardly curving inner surface of the domed end 12 of the overcap 10 and lower end of the thrust plate 4, while the helical spring lies within the sleeve and is loosely engaged at its lower end to the upper portion of the tapered fins 18 of the actuator 13. In this position the valve stem of the aerosol is not fully engaged in the upper recess 14, 15, 16 of the actuator 13, and is prevented from being further depressed by the sleeve 19 (see Fig. 2). Boxes of aerosol assemblies according to the invention can thus be safely stacked five or six high without the combined weight actuating the aerosol cans in the lower box.

When the aerosol assembly is to be used, the overcap is pulled free from the helical spring allowing the safety sleeve 9 to be removed. The overcap 10 can then be refitted loosely on the helical spring 9 and its domed end 12 seated on a drain opening. As the aerosol can 1 is then depressed, the internal ribs 8 of the overcap ensures even movement

down the aerosol can body and the helical spring is pushed further down the locking fins 18. The resilience of the spring allows gradual depression of the aerosol can until the top thereof fits within the upper actuator recess 14, 15, 16. The valve stem 2 will then be actuated on further depression of the aerosol can forcing a highly pressurised stream of aerosol propellant into the blocked drain via the lower recess 17 of the overcap 13.

The pressurised aerosol can is therefore made safe and easy to use at minimum expense.

Claims

1. An aerosol can assembly comprising:

an aerosol can having a valve stem;

a thrust plate device engagable at its upper end engaged with the aerosol can and including a thrust plate having an aperture in alignment with the valve stem;

an actuator engagable with the valve stem for release of the aerosol propellant;

a resilient member located between the actuator and the lower end of the thrust plate; said resilient member being engaged at one end and capable of engaging in a first looser and second tighter position at the other end;

a rigid removable spacing means adjacent the resilient member and abutting between the lower end of the thrust plate and means at or in the actuator, the spacing means having sufficient length to prevent the valve stem engaging with the actuator.

2. An aerosol can assembly as claimed in claim 1 wherein the spacing means is a sleeve positioned adjacent periphery of the resilient member.

3. An aerosol can assembly as claimed in any of claims 1 or 2 wherein the resilient member is a closed helical spring.

4. An aerosol can assembly as claimed in claim 3 wherein the base of the actuator has tapered fins extending therefrom over which the helical spring increasingly engages depending on how far therealong it is permitted to travel.

5. An aerosol can assembly as claimed in any one of the preceding claims wherein the actuator is an upstanding block with a female groove of complimentary shape to grip and depress the valve stem when the aerosol can is pushed downwards.

6. An aerosol can assembly as claimed in any one of the preceding claims wherein there is further provided an overcap which carries the actuator therewithin and into which the top of the aerosol can projects to be engagable with the actuator, and wherein the lower edge of the overcap is dome shaped for seating on a drain opening.

7. An aerosol can assembly as claimed in any one of the preceding claims wherein the thrust plate device includes lugs

for engagement in a crimped recess on the top of the aerosol can, and further lugs for engagement with the resilient member.

8. An aerosol can assembly substantially as described with reference to the drawings.

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